3055 BA SANGAM COLLEGE

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WORKSHEET 24

School: Ba Sangam College Year/level: 10

Subject: Basic Science NAME: _____

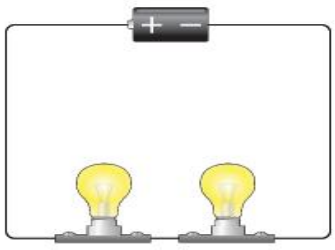
Strand 2	Energy
Sub Strand 2.1	Energy transformation, use and conservation
Content Learning Outcome	Investigate ways electricity is produced using simple electrical circuits and determine and calculate consumption of electrical energy in homes deriving ways to conserve this energy.

Lesson Notes

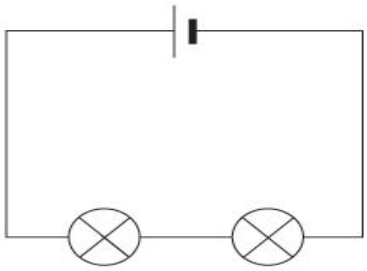
Electrical Circuits

A simple circuit consists of three elements:

- a source of electricity (battery),
- a path or conductor on which electricity flows (wire) and
- an electrical resistor (lamp) which is any device that requires electricity to operate.
  - The conducting path through the bulb, wires and battery is called a *circuit*.
  - Electrons flow around the circuit from the - to the + terminal of the battery.
  - The flow of - charge is called a *current* and it can be measured by placing an *ammeter* in the circuit.



Set up A



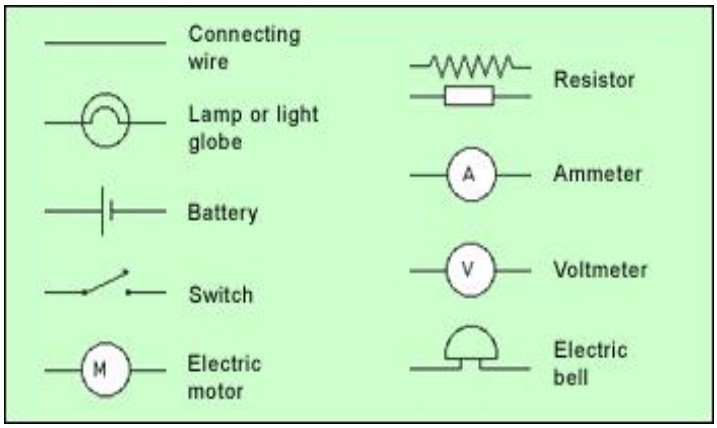
Set up B

*The flow of electricity is caused by excess electrons on the negative end of the battery flowing toward the positive end, or terminal, of the battery.

*When the circuit is complete, electrons flow from the negative terminal through the wire conductor, then through the bulb (lighting it up), and finally back to the positive terminal - in a continual flow.

*Set-up B is a *circuit diagram* for Set-up A which uses symbols when drawn.

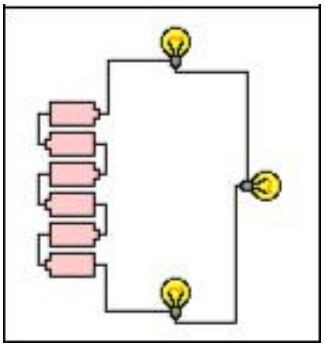
* Common symbols are shown below.



Circuit Connections

Series Arrangement

In a series circuit, each device is connected in such a way that there is only one pathway for charge flow. In other words, there are no branches.

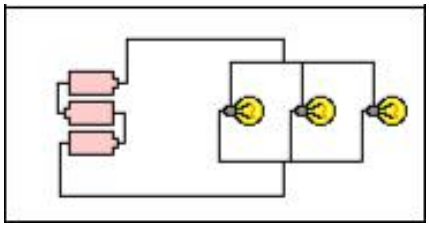


Disadvantages of Series Arrangement

- When more lamps are added to the series, the lamps will be dimmer than before.
- If a lamp does not work, the rest will not work too.

Parallel Arrangement

In parallel circuits different components are connected on different branches of the wire.



Advantages of Parallel Arrangement

- Unlike a series circuit, the lamps stay bright even if you add more lamps in parallel.
- If a lamp breaks or becomes faulty, the other lamps on different branches keep working

NOTE: This arrangement is used for wirings at home

Exercise

1. What is a circuit?

_____

_____

(1 mark)

2. Describe how electrons flow through a circuit.

_____

_____

(1 mark)

3. Name the two types of circuit arrangements.

_____

_____ (2 marks)

4. State 2 advantages of using parallel arrangement.

_____

_____

(2 marks)

5. State 2 disadvantages of using series arrangement.

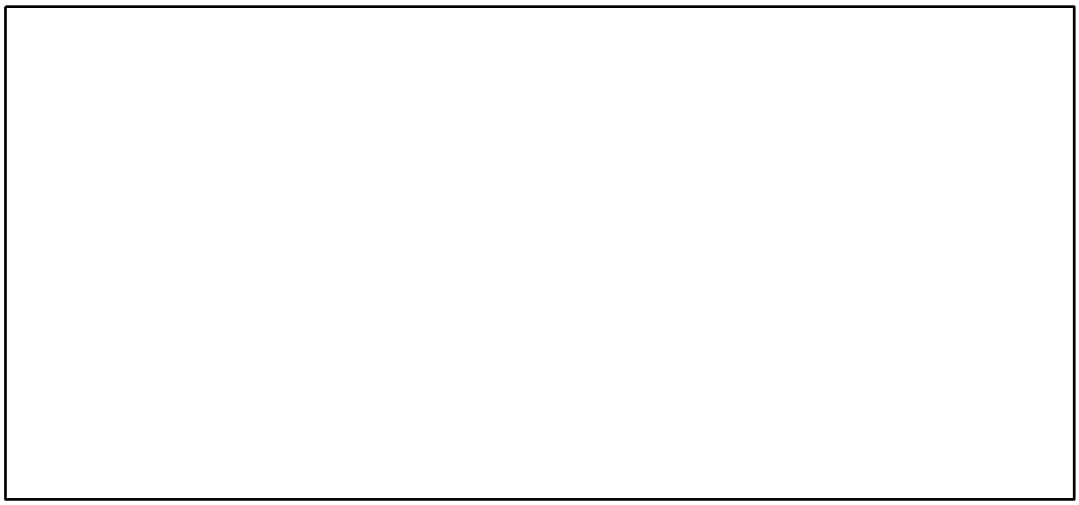
_____

_____

(2 marks)

6. Draw a circuit diagram using parallel arrangement using the following:

- 1 battery
- 2 bulbs
- Connecting wires
- 1 switch (2 marks)



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